

Date of Snowmelt at High Latitudes as Determined from Visible Satellite Data and Relationship with the Arctic Oscillation

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Abstract

Spring snow cover across Arctic lands has, on average, retreated approximately five days earlier since the late 1980s compared to the previous twenty years. However, it appears that since about 1990, the date the snowline first retreats north during the spring has remained nearly unchanged - in the last twenty years, the date of snow disappearance has not been occurring noticeably earlier. Snowmelt changes observed in the 1980s was step-like in nature, unlike a more continuous downward trend seen in Arctic sea ice extent.

At latitude 70°N, several latitudinal segments (of 10 degrees) show significant (negative) trends. However, only two latitudinal segments at 60°N show significant trends, one positive and one negative. These variations appear to be related to variations in the Arctic Oscillation (AO). Additional observations and modeling investigations are needed to better explain past and present spring melt characteristics and peculiarities.